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EXAMINER

MITCHELL, JASON D

ART UNIT	PAPER NUMBER
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2193

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/611,726

Applicant(s)

PAUL ET AL.

Examiner

Jason Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to an application filed 7/1/03.

Claims 1-20 are pending in this application.

Specification

The disclosure is objected to because of the following informalities: The second paragraph on pg. 9 refers to a "user interface application 50". Fig. 5 does not show a user interface application 50. It is assumed the disclosure was intended to refer to "user interface application 40".

Appropriate correction is required.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: The second to last paragraph on pg. 4 refers to a "complex chain 20". The drawings do not contain a reference number 20.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are

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not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 4 and 15 are objected to because of the following informalities:

Regarding Claim 4: The phrase "wherein the image processing chain be related" is grammatically incorrect and should read "wherein the image processing is related" or "can be related".

Regarding Claim 15: Claim 15 is improperly dependent upon it's self. For the purposes of this examination claim 15 will be treated as dependent on claim 13.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 6 recites the limitation "the algorithm module" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-6, 13-14, 16 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by “A visual programming interface for an image processing environment” by Koelma and Smeulders (Koelma).

Regarding Claim 1: Koelma discloses a method for dynamically controlling the sequence of execution of image processing algorithms (Title “A visual programming interface for an image processing environment”), without recompiling an image processing computer program (pg. 13, Section 5.6 “the program can be re-executed immediately upon changes made to it”), the method comprising: providing a plurality of image processing elements as self-contained modules which can be executed individually in a plurality of possible sequences (pg. 8, “The library handler (figure 2) gives a hierarchical overview of the image processing functions in the library (or libraries) known to the interface.”); providing an image processing chain in a script capable of execution by a script interpreter in a computer arranged to receive raw image data (pg. 8, “The worksheets (figure 3) are used to construct hierarchical data flow graphs from the functions in a library”); wherein the image processing chain determines a selected sequence of execution of the image processing elements (pg. 8, “The constructed data flow graph is executed with the aid of the C-interpreter.”); and relating the image processing chain to a clinical protocol, which is subsequently executed by the computer while running a compiled image processing computer program to process

image data (pg. 9, "visual programs can be stored and retrieved as visual programs or they can be stored as C-programs.").

Regarding Claim 2: The rejection of claim 1 is incorporated; further Koelma discloses the plurality of processing elements in an image processing chain are stored in a repository of image processing elements for easy access during image processing chain editing operations (pg. 8, "The library handler (figure 2) gives a hierarchical overview of the image processing functions in the library (or libraries) known to the interface.").

Regarding Claim 4: The rejection of claim 1 is incorporated; further Koelma discloses the image processing chain be related to any one of a plurality of clinical protocols (pg. 8, "combining several functions into a single visual function").

Regarding Claim 5: The rejection of claim 1 is incorporated; further Koelma discloses the method is carried out by an administration tool comprising a plurality of image processing tools which can be installed on the computer associated with the item of medical imaging equipment (pg. 8, "The library handler (figure 2) gives a hierarchical overview of the image processing functions in the library") and executing the image processing application to process the raw data into an image that can be displayed (pg. 8, "The constructed data flow graph is executed with the aid of the C-interpreter.").

Regarding Claim 6: The rejection of claim 1 is incorporated; further Koelma discloses the algorithm module is generated in a tool command language (pg. 5, Section 4 "The visual programming interface has been built on top of the image processing environment SCIL_Image").

Regarding Claim 13: Koelma discloses a method for constructing image processing chains that can be easily edited for addition of new processing algorithms, the method comprising: specifying image processing elements in an image processing chain (pg. 8, "The worksheets (figure 3) are used to construct hierarchical data flow graphs from the functions in a library"); applying the image processing elements in a sequence or in parallel to one or more resulting images to be displayed (pg. 12, section 5.5 "Parallelism can be exploited in several ways"); defining inputs for each image processing element defining outputs for each image processing element (pg. 8, "The user can make connections between functions by selecting an input pin and an output pin with the same data type"); saving output images of different image processing chains (pg. 5, "We have based the definition of the communication link on three assumptions ... and ability to create, copy and destroy images.").

Regarding Claim 14: The rejection of claim 13 is incorporated; further Koelma discloses constructing additional image processing chains from smaller image processing chains (pg. 8, "combining several functions into a single visual function"), said smaller image processing chains being related in sequence or in parallel (pg. 12, section 5.5 "Parallelism can be exploited in several ways").

Regarding Claim 16: Koelma discloses a method for adding an image processing algorithm to a compiled image processing computer program (pg. 5, "The addition of new image processing functions should become almost trivial"), without recompiling the image processing computer program (pg. 13, Section 5.6 "the program can be re-executed immediately upon changes made to it"), the method comprising: providing a

plurality of image processing elements as self-contained modules which can be executed individually in a plurality of possible sequences (pg. 8, "The library handler (figure 2) gives a hierarchical overview of the image processing functions in the library (or libraries) known to the interface."); and providing an image processing chain in a script capable of execution by a script interpreter in a computer arranged to receive raw image data (pg. 8, "The worksheets (figure 3) are used to construct hierarchical data flow graphs from the functions in a library"); adding a new image processing element (pg. 5, "The addition of new image processing functions should become almost trivial"); configuring the image processing chain to determine the sequence of execution of the image processing elements including the new image processing element (pg. 13, Section 5.6 "the program can be re-executed immediately upon changes made to it"); and relating the image processing chain to a clinical protocol, which is subsequently executed by the computer while running the compiled image processing computer program to process image data (pg. 9, "visual programs can be stored and retrieved as visual programs or they can be stored as C-programs.").

Regarding Claim 19: The rejection of claim 16 is incorporated; further Koelma discloses the plurality of processing elements in an image processing chain are stored in a repository of image processing elements for easy access during image processing chain editing operations (pg. 8, "The library handler (figure 2) gives a hierarchical overview of the image processing functions in the library (or libraries) known to the interface.").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over “A visual programming interface for an image processing environment” by Koelma and Smeulders (Koelma) in view of US 6,078,967 to Fulghum (Fulghum).

Regarding Claims 3 and 20: The rejections of claims 1 and 19 are incorporated, respectively; further Koelma does not disclose the repository of image processing elements (pg. 8, “The library handler (figure 2)”) is stored on a memory storage device dedicated to that function and accessible by the computer.

Fulghum teaches storing ‘enabling algorithms’ on a dedicated memory storage device (col. 2, lines 50-56 “storing an enabling algorithm in a dedicated storage device of the peripheral device”)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to store Koelma’s enabling algorithms (pg. 8, “the image processing functions in the library”) on a dedicated storage device, as taught by Fulghum (col. 2, lines 50-56 “a dedicated storage device of the peripheral device”), in order to “a hierarchical overview of the image processing functions in the library” (Koelma pg. 8) “in a manner that does not require a customer to administer a hard disk drive” (Fulghum col. 2, lines 57-67).

Claims 7 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over “A visual programming interface for an image processing environment” by Koelma and Smeulders (Koelma).

Regarding Claim 7: The rejection of claim 1 is incorporated; further Koelma discloses image processing chains generated with a text editor (pg. 10, Section 5.4 “in a textual interface, explicit variable names are used to denote intermediate results in an application.”; also see Fig 5) as a less preferred embodiment (pg. 10, Section 5.4 “It is our experience that data flow graphs are a more natural way for a layman to express image processing applications than textual interfaces”).

MPEP 2123.II states:

Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). “A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use.” In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) (The invention was directed to an epoxy impregnated fiber-reinforced printed circuit material. The applied prior art reference taught a printed circuit material similar to that of the claims but impregnated with polyester-imide resin instead of epoxy. The reference, however, disclosed that epoxy was known for this use, but that epoxy impregnated circuit boards have “relatively acceptable dimensional stability” and “some degree of flexibility,” but are inferior to circuit boards impregnated with polyester-imide resins. The court upheld the rejection concluding that applicant’s argument that the reference teaches away from using epoxy was insufficient to overcome the rejection since “Gurley asserted no discovery beyond what was known in the art.” 27 F.3d at 554, 31 USPQ2d at 1132.).

Accordingly it is Examiner’s position the claim is unpatentable over Koelma’s disclosure of generating chains with a text editor (see e.g. Fig. 5).

Regarding Claim 15: The rejection of claim 13 is incorporated; further Koelma discloses conditionally applying image processing chains (pg. 14 "In the KHOROS environment [9] the control structures are based upon the use of variables and thus are not visual or even visible"; also see Fig. 7 'Condition') as a less preferred embodiment (pg. 14 "Control structures are not supported in the visual language as we feel it is impossible to combine user-friendliness and flexibility in these structures").

Thus, as discussed in the rejection of claim 7, the claim is unpatentable over Koelma's disclosure of conditionally applying image processing chains (see Fig. 7 'Condition')

Regarding Claim 17: The rejection of claim 16 is incorporated; further Koelma discloses relating the modified image processing chain to a clinical protocol, which is subsequently executed by the computer while running the compiled image processing computer program to process image data (pg. 9, "visual programs can be stored and retrieved as visual programs or they can be stored as C-programs.").

Further, as discussed in the rejection of claim 7, the claim is unpatentable over Koelma's disclosure of generating chains with a text editor (pg. 10, Section 5.4 "in a textual interface, explicit variable names are used to denote intermediate results in an application."; also see Fig 5).

Regarding Claim 18: The rejection of claim 17 is incorporated; further Koelma discloses the method is carried out by an administration tool comprising a plurality of image processing tools which can be installed on the computer associated with the item of medical imaging equipment (pg. 8, "The library handler (figure 2) gives a hierarchical overview of the image processing functions in the library") and executing the image

processing application to process the raw data into an image that can be displayed (pg. 8, "The constructed data flow graph is executed with the aid of the C-interpreter.").

Claims 8-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over "A visual programming interface for an image processing environment" by Koelma and Smeulders (Koelma) in view of Applicant acknowledged prior art techniques.

Regarding Claim 8: The rejection of claim 1 is incorporated; further Koelma does not disclose that raw image data is received from an item of medical imaging equipment but does disclose that "[image processing] applications are frequently encountered in ... medical ... image processing" (see pg. 4).

Further, in the paragraph bridging pp. 1 and 2 of the instant specification, Applicant indicates that it was known in the art, at the time of invention, to apply image processing algorithms, as taught by Koelma (pg. 8, "the image processing functions in the library"), to raw image data received from an item of medical imaging equipment (pg. 1 "Medical imaging equipment ... is used to obtain, process and store image data which can be processed and displayed as images. ... Image processing algorithms are applied to the raw image data, so that the image can be better viewed and analyzed by the medical professional.")

Accordingly, It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply Koelma's "image processing functions" designed in Koelma's "visual programming interface" to raw image data received from an item of

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medical imaging equipment, as disclosed by applicant (pg. 1 "Medical imaging equipment ... is used to obtain, process and store image data which can be processed and displayed as images), because "The user interface of an image processing environment is a key aspect of the proper functioning of such an environment" and because "A good user interface can significantly reduce the development effort of new image processing applications" (Koelma pg. Section 1).

Regarding Claims 9 and 11-12: The rejection of claim 8 is incorporated for each claim; further Applicant acknowledges that CT scanners, ultrasound imaging machines, and x-ray RAD scanners were all known examples of medical imaging devices, and thus as discussed in the rejection of claim 8, It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply Koelma's "image processing functions" designed in Koelma's "visual programming interface" to raw image data received from such medical imaging equipment

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over "A visual programming interface for an image processing environment" by Koelma and Smeulders (Koelma) in view of US 5,005,578 to Greer et al. (Greer).

Regarding Claim 10: The rejection of claim 8 is incorporated; further Koelma does not disclose receiving raw image data from an MR scanner.

Greer teaches processing raw image data received from an MR scanner (col. 3, lines 61-64 "machine-independent software modules which assess and correct distortion, and

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which facilitate examination, manipulation and quantitative measurement of MR images”).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply Koelma’s “image processing functions” designed in Koelma’s “visual programming interface” to raw image data received from an MR scanner, as disclosed by Greer (col. 3, lines 61-64), because “The user interface of an image processing environment is a key aspect of the proper functioning of such an environment” and because “A good user interface can significantly reduce the development effort of new image processing applications” (Koelma pg. Section 1).


Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Mitchell whose telephone number is (571) 272-3728. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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10/11/06



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